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Real-Time Carpooling Application for Android Platform

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Abstract — in today's world, everyone commuting from one place to another for specific reasons. E.g. school, job, excursion etc. Carpooling is the application based on android platform help sharing of car journeys so that more than one person travels in a same car. By adopting this application, users, will help to reduce high amount of CO2 emission because of car. Carpooling reduces each person's travels costs such as fuel costs, parking space, tolls, and the stress of driving. Carpooling application is a more environmentally friendly and sustainable way to travel as sharing journeys. Carpooling is more suitable, especially during high fuel prices and high pollution periods. Carpooling is Android based application that provide more security and easy way to find a car for journey. Also it is working on mobile device which makes it more usable and makes the service more dynamic.

Keywords: Google map, GPS, Carpool, pickup point.

I. INTRODUCTION

In today's word everyone is migrating from one place to another for many reasons. Because more people uses the private car transportation is very difficult problem in now a day's. Also it makes more traffic on roads, air pollution because of carbon dioxide or many more.

Carpooling goals at solving this problem by filling the vacant/unused seats in the private cars. Employees of the same path or the students, employees going to the same school, company can carpool. When passengers are from same area then communication is not a big issue but when area is not same then one cannot aware about the passenger for same destination. Thus applications helps you in finding people and journey agendas and make an informed decision about do you wish to travel alone or save journey cost and travel with a safe company. Additionally, carpooling has many social and environmental benefits that include:

- It helps in reducing traffic by reducing number of vehicles on the road.
- As the system focus at the empty seats it increase vehicle occupancy.
- It helps in reducing parking requirements resulting in more efficient land use. Also helps in minimizing cost of building and maintaining infrastructure.

Our application aims to make a system which is user friendly and provides an opportunity to share cars. We focused on making a system which would be help the users to upload, view and register for both short distance and long distance trips within the same city. The application mainly focuses on user safety.

II. PROBLEM DEFINITION

Use of vehicles causes pollution which has its adverse effects. Car sharing is a solution but problems like security and trust comes. Can this problem be solved? Solution to this problem is mobile based Car sharing application. The Carpool application would provide its user a safe and secure way to share cars. This could include both daily journeys such as going to workplace within the city and also long inter-city trips.

III. CARPOOLING STRATEGIES

Carpooling is application intended to better utilize the vacancy seat in the passengers cars. It can be helpful the lowering the fuel usage, time consuming, it will be also helpful to reduce the cost of travel, traffic on the road, pollution & resulting in green environment. The group of people can travel to the same destination then they can share the car without using the different car this is called as a carpooling. It is simple term carpooling is a cost saving. The GPS device is use for locating the passenger & driver status. This carpooling app which will be run on the mobile phone that should be GPS enabled. The carpooling app provided many services from various pickup & dropping point. The carpooling app which will be useful to overcome transportation in the country.

IV. SYSTEM IMPLEMENTATION

Carpooling system is a dynamic system which based on two underlying sources of information: which includes route announcement by the user and route selection and registration by passengers. The user who is going to travel by his/her car will mention source and destination along with the route which is selected by him/her. He will also mention the capacity of vehicle. The user (passenger) who finds the path as per his request can register for the trip. Carpooling system has a detailed phased registration system. For ensuring trust and security the system will check for any valid identity proof such as UID, users own pan card number provided by government. Our system will take feedback about users experience in trip. For displaying routes and users position we use digital maps.

Additional thing we are using flexible drop off points. The systems GUI (graphical user interface) will be user-friendly and standard.

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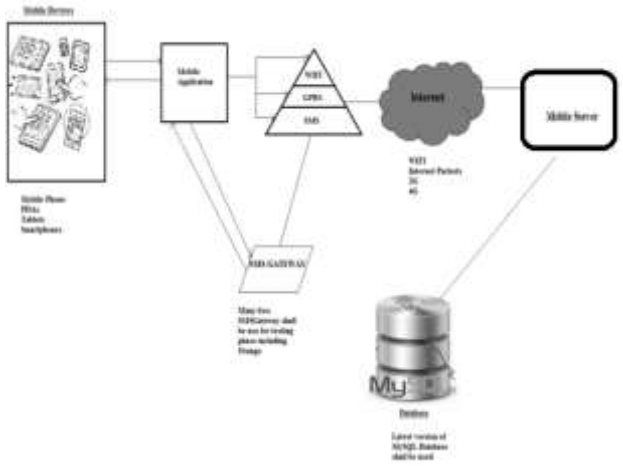

Fig. 1 Architecture

A. Registration:

In carpooling apps, basically there are two modules that is driver module and passenger model; both have to register their devices so that server can get their location details using GPS and other contact details such as name, mobile number, vehicle type, vehicle capacity etc.

All the details of passenger and driver are stored in SQL server on web and location of the passenger and driver are updated regularly using web service.

To transfer data from client to server or server to client by using PHP connectivity and to separate data on client side by using JSON parser.

Fig. 2 Registration

B. Start of journey situation

Once the registration is completed, Then journey will start; the both source and destination addresses entered by both driver and passenger the source addresses are send to server.

After that server sends the available root to the driver and then driver will select the appropriate route for his specified destination. All this information are saved on a server.

In passenger side server also sends the available route for destination is display to passenger with available seats, appropriate vehicle select.

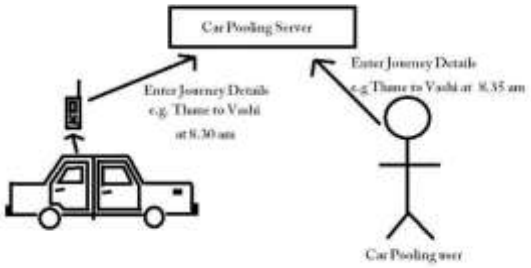

Fig. 3 Start of journey

C. Once the request is accepted

Whenever there is search either from driver side or passenger side, there is update on server on notification table and services running on both driver and passenger side get activated and get the updates from server and can be seen as a notification.

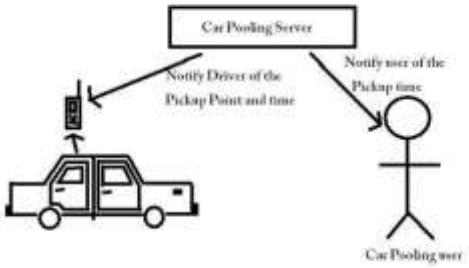

Fig. 4 After confirmation of driver

V. REQUIREMENTS

Carpooling mostly uses following three recent technologies:

Fig. 5 MAP

A) **GPS Navigation Device:** To determine driver's route.
B) **Smart Phone:** For a passenger to request a ride from whenever they happen to be.
C) **Social Networks:** To establish trust between driver and passenger.

VI. BENIFITS

There are many great benefits of carpooling, many of which people do not know about or even think about. With these benefits in consideration, it will be easier than ever to see why making the switch, even for just a few days a week, it will be good idea for you and your commute.

1) Carpooling Helps Save You Money

You can save money on gas and such by diving up the gas prices among your carpool passengers. -The more people you have the more you can save. Carpooling application also helps you save on the cost of vehicle repairs and maintenance by rotating vehicle use among the members of your carpool team. Additionally, everyone else can save some money on road fees because with more carpooling there are less cars on the road and therefore less wear and damage to the roads that need to be repaired each year using taxpayer's money.

2) Carpooling Helps the Environment

Carpooling cuts down on the number of cars and vehicle son the road. Fewer number of cars means there is less emission of co2 and other gasses and pollution. This prevents the environment by keeping the air, water, and land cleaner.

3) It is Good for You

According to numerous health reports and research, air pollution caused by auto emissions can increase the likelihood of health issues such as asthma, allergies, lung cancer, and the like. Research data has also given a suggestion that carpooling can be far less stressful than simply commuting on your own.

4) Carpooling is a Very Convenient Option

Carpooling is a way of sharing car that can give you great flexibility. If you want to carpool three days a week or five, you can do so. Whatever your needs are, you can look for people who need that same schedule or who can add you to their drive path on the days you need a ride. The flexibility makes it a very convenient option for any long commute.

5) It Helps You Make New Friends

Carpooling is also a wonderful way to meet people, get to know the people you work with or go to school with, and to make new friends!

Carpooling application helps to saves money and reduces congestion on our roads and highways. This application also gives you the opportunity to develop friendships with co-workers or other commuters. There are a number of benefits when two or more people share a ride in one vehicle.

VII. SURVEY AND RESULTS

Carpooling system is used in many countries like China 77% had heard of carpooling and 16% was used. After this survey they did attitudinal questions towards carpooling, then survey was interested in carpooling were 62% and 38% were not interested. They used many means to come in contact with people like Newspapers, Internet, Friends, Colleagues, and Radios. These all means were used for people to get carpooling information. After using carpooling system the statistic suggests the saving and expenses would be as follow:

Carpooling Disadvantage	Time Coordination Difficulty	Cost Sharing Difficulty	Less Privacy
Driver	53%	29%	37%
Non-Driver	75%	72%	27%
Carpooling Disadvantage	**Potential Dispute**	**Inconvenience**	**Insecurity**
Driver	68%	76%	37%
Non-Driver	70%	20%	36%

Table I. Carpooling Statistics

VIII. CONCLUSION

Carpooling system is very effective way to reduce pollution and the congestion of vehicles on the roads in cities. It also provides an eco-friendly way to travel in both intercity and intracity trips. It also provides an occasion to meet new people. As today most people prefer private vehicle to travel due to delay caused in public transport system. Pre-registration ensures that only verified people get into the vehicle so that trust can be established. Thus the proposed carpooling system will be effective in reducing environment pollution.

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